

REMARKS/ARGUMENTS

Applicants respectfully request reconsideration of the present Application in view of the foregoing amendments and the following remarks. This application was originally filed with claims 1-17. In the present Amendment, claims 1, 4, 5, 9, 12, 13 and 17 have been amended. No claims have been canceled or added at this time. Accordingly, claims 1-17, as amended herein, remain pending in the present Application.

I. OBJECTIONS

The Examiner has objected to the drawings filed on April 2, 2004, as being informal and noncompliant with the pertinent drawing requirements. In response, the Applicant respectfully directs the Examiner's attention to the formal drawings filed in the application on June 11, 2004 (received in the OIPE on June 14, 2004). In view of these previously filed formal drawings, the Applicant accordingly requests that the drawing objection be withdrawn.

II. REJECTIONS UNDER 35 U.S.C. §102

The Examiner has rejected independent claims 1 and 17 under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Patent No. 5,640,408 to Jani, *et al.* In response, the Applicant has amended independent claims 1, 9 and 17 to include limitations reciting further novel features. Specifically, independent claims 1, 9 and 17 have been amended to recite that the spacing between the high-power diode bars and the location of the diode array from the laser rod are selected such that the full-width, half max (FWHM) point of the radiation from one diode bar overlaps the FWHM point of the radiation of an adjacent diode bar so as to allow the laser rod to receive radiation from the diode arrays in a substantially uniform distribution along the length of the laser rod. In contrast, Jani does not disclose selecting the spacing between the high-power

diode bars and the location of the diode array from the laser rod are selected such that the FWHM point of the radiation from one diode bar overlaps the FWHM point of the radiation of an adjacent diode bar so as to allow the laser rod to receive radiation from the diode arrays in a substantially uniform distribution along the length of the laser rod. As a result, Jani also does not anticipate claims 1 and 17.

While Jani does appear to disclose a laser pumping assembly having diode bars emitting radiation directly on a laser rod, Jani still does not disclose all of the elements of amended independent claims 1 and 17. More specifically, a primary object of Jani is to dope a laser rod (“laser crystal”) with a specific amount of thulium (Tm) so that laser amplification is provided when lesser power diodes are employed. Jani refers to this as lowering the threshold of total optical energy used for amplification when compared to comparable conventional laser assemblies. (Col. 5, lns. 27-34). Thus, Jani does not disclose employing high-power diode bars, as recited in claim 1 and 17, and instead actually teaches the express goal of using lower power diodes, which teaches away from claims 1 and 17. In addition, there is nothing in Jani that discloses selecting the spacing between the high-power diode bars and the location of the diode array from the laser rod such that the FWHM points of radiation from adjacent diodes overlap. Jani simply discusses directly irradiating the laser rod with radiation from the diode bars, but does not even suggest adjusting the spacing of various components in the assembly to overlap the FWHM points of adjacent diodes. Accordingly, Jani also does not anticipate independent claims 1 and 17, and therefore the Applicant respectfully requests that the Examiner withdraw this rejection.

The Examiner has also rejected claims 1, 7, 8 and 17 under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Patent No. 5,978,407 to Chang, *et al.* As discussed above,

independent claims 1 and 17 have been amended to recite that the spacing between the high-power diode bars and the location of the diode array from the laser rod are selected such that the full-width, half max (FWHM) point of the radiation from one diode bar overlaps the FWHM point of the radiation of an adjacent diode bar so as to allow the laser rod to receive radiation from the diode arrays in a substantially uniform distribution along the length of the laser rod. As a result, Chang does not anticipate claims 1 and 17, nor dependent claims 7 and 8, which depend from claim 1.

First, claims 1 and 17 of the present application explicitly recite the use of high-power diode bars (e.g., 40 or 50 watts) in the diode arrays employed in the laser assembly. In contrast, Chang clearly employs low-power diode bars (e.g., 20 watts), as specifically shown in Figure 2 of Chang. Additionally, Chang does not disclose selecting the spacing between the high-power diode bars and the location of the diode array from the laser rod such that the FWHM points of radiation from adjacent diodes overlap. Instead, Chang specifically teaches the use of “compound parabolic concentrators (CPCs)” to receive the light generated by the diode bars, and ensure little or no light is wasted by reflecting the light multiple times within the CPCs. As a result, Chang system does not permit the direct irradiating of the laser rod with the diode bars, much less irradiating the laser rod where the spacing between the high-power diode bars and the location of the diode array from the laser rod are selected such that the FWHM points of radiation from adjacent diodes overlap. In fact, the mere use of the Chang’s CPCs specifically teaches away from these elements of claims 1 and 17, since the use of Chang’s CPCs prevents the positioning of the diode bars so as to employ the FWHM points of radiation. Thus, Chang also does not anticipate independent claims 1 and 17, and the Applicant accordingly requests that the Examiner withdraw this rejection as well.

The Examiner has also rejected claims 1-3, 6-11 and 14-17 under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Published Application No. 2002/0018288 to Rieger, *et al.*, on which the present Applicant is a co-inventor. However, because of the amendments to independent claims 1, 9 and 17 discussed above, Rieger also does not anticipate claims 1, 9 and 17, or their corresponding dependent claims. Specifically, Rieger does not disclose selecting the spacing between the high-power diode bars and the location of the diode array from the laser rod such that the FWHM points of radiation from adjacent diodes overlap. In fact, Rieger explicitly teaches spacing the diode bars such that the radiation from adjacent diode bars “substantially overlaps” so that if a diode bar should fail, diodes adjacent to it can make up the radiation lost (for example, see claim 29 of Rieger). Since Rieger teaches spacing the diode bars in such a manner for the specific invention(s) disclosed in that reference, it does not teach spacing them to overlap at the FWHM point. For at least these reasons, Rieger does not anticipate independent claims 1, 9 and 17, or the claims depending therefrom. Accordingly, the Applicant also respectfully requests that the Examiner withdraw this rejection as well.

III. REJECTIONS UNDER 35 U.S.C. §103

The Examiner has rejected dependent claim 2 under 35 U.S.C. §103(a) as allegedly obvious and thus unpatentable over Jani in view of U.S. Patent No. 6,590,911 to Spinelli, *et al.* or U.S. Publication No. 2004/0233942 to Schlueter, *et al.* In addition, the Examiner has also rejected dependent claims 3-6 under 35 U.S.C. §103(a) as allegedly obvious and thus unpatentable over Jani in view of U.S. Patent No. 6,351,477 to Du. Third, the Examiner has rejected dependent claims 4, 5, 12 and 13 under 35 U.S.C. §103(a) as allegedly obvious and thus unpatentable over U.S. Published Application No. 2002/0018288 to Rieger, *et al.* The Applicant

respectfully asserts that dependent claims 2-6, 12 and 13 are not obvious over the cited combinations of references, since these dependent claims depend from either independent claim 1 or 9.

Initially, as discussed above Rieger does not teach or suggest all of the elements recited in amended independent claims 1 and 9. Since dependent claims 4, 5, 12 and 13 respectively depend from these independent claims, and thus add further limitations, Rieger also does not teach or suggest these dependent claims. Accordingly, the Applicant respectfully requests that the §103 rejection with respect to dependent claims 4, 5, 12 and 13 be withdrawn. Also as discussed above, Jani also does not teach or suggest all of the elements recited in amended independent claims 1, from which claims 2-6 depend. Moreover, neither Spinelli, Schlueter nor Du do anything to cure the deficiencies of Jani discussed above, and are only relied upon for specific teaches recited only in these dependent claims. As a result, the combinations of Jani and Spinelli, Jani and Schlueter, and Jani and Du do not teach or suggest all of the elements of independent claim 1, from which claims 2-6 depend. Thus, dependent claims 2-6 are also not obvious in view of these combinations of references, and the Applicant respectfully requests that the Examiner withdraw the §103(a) rejection with respect to these dependent claims as well.

IV. CONCLUSION

The Applicants respectfully submit that pending claims 1-17 as herein amended are in condition for allowance, and request a Notice of Allowability for the pending claims. The Examiner is invited to contact the undersigned Attorney of Record if such would expedite the prosecution of the present Application.

Applicants note that the three-month period for response expired on June 8, 2006, and are

therefore including the necessary extension fees. If it is determined that additional fees are due, please charge Deposit Account No. 13-0480, referencing the Attorney Docket Number specified herein.

Respectfully submitted,

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